

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOSEPH F. BRINGLEY

Appeal 2007-3913
Application 10/822,940
Technology Center 1700

Decided: December 13, 2007

Before BRADLEY R. GARRIS, CHARLES F. WARREN, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from the Examiner's
decision rejecting claims 1-44. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellant claims a composition comprising derivatized nanoparticles
comprising inorganic nanoparticles having an attached metal-ion sequestrant

(claim 1) and an article comprising immobilized derivatized nanoparticles of the aforementioned type (claim 22).

Representative claims 1 and 22 read as follows:

1. A composition of matter comprising derivatized nanoparticles comprising inorganic nanoparticles having an attached metal-ion sequestrant, wherein said inorganic nanoparticles have an average particle size of less than 200 nm and the derivatized nanoparticles have a stability constant greater than 10^{10} with iron (III).

22. An article comprising immobilized derivatized nanoparticles, said derivatized nanoparticles comprising inorganic nanoparticles having an attached metal-ion sequestrant, wherein said inorganic nanoparticles have an average particle size of less than 200 nm and the derivatized nanoparticles have a stability constant greater than 10^{10} with iron (III)

The references set forth below are relied upon by the Examiner as evidence of obviousness:

DeVoe	4,530,963	Jul. 23, 1985
Ranney	6,106,866	Aug. 22, 2000

All appealed claims are rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVoe in combination with Ranney.

The Examiner basically finds that DeVoe discloses inorganic particles having an attached metal-ion sequestrant but not the nanosize feature of claim 1 and that Ranney discloses organic nanoparticles having an attached metal-ion sequestrant but not the inorganic feature required by claim 1 (Ans. 3-4). The Examiner concludes that it would have been obvious for an artisan with ordinary skill in this art to combine the teachings of these

references such that DeVoe's particles are made nanosized in view of Ranney or Ranney's nanoparticles are modified to include an inorganic rather than organic carrier for the attached metal-ion sequestrant in view of DeVoe (Ans. 4-7).

Appellant argues that the particles of DeVoe and Ranney are utilized for entirely different purposes such that it would not have been obvious to modify one in view of the other in the manner proposed by the Examiner (App. Br. 4; Reply Br. 2-3). This argument is unpersuasive.

Appellant is incorrect that the particles of DeVoe and Ranney are utilized for entirely different purposes. DeVoe's particles are used, *inter alia*, for removing iron (III) from liquid such as biological solutions (col. 2, ll. 25-35; col. 10, ll. 52-55). Similarly, the nanoparticles of Ranney are used, *inter alia*, for chelating internal body iron that causes and amplifies local tissue injury wherein the particles comprise a carrier plus chelator without metal-ion (col. 7, ll. 48-60; col. 19, ll. 5-27).¹

Moreover, we perceive merit in the Examiner's position that it would have been obvious to form DeVoe's particles with the nanosizes taught by Ranney (col. 15, ll. 55-57) and required by the appealed claims in order to obtain the expected higher surface area and iron-removal benefits associated

¹ While not argued by Appellant, the chelators preferred by Ranney bind iron (III) specifically, have a formation constant (i.e., a stability constant; *see* Specification 6: 27-30) within the claim 1 range and include, for example, DTPA which is a chelator or sequestrant encompassed by claim 1 (e.g., *see* Specification 8, Table 1 as well as lines 5-6) (Ranney, para. bridging cols. 33-34).

therewith (Ans. 7). Appellant does not specifically contest this position other than to argue that Ranney's particles need to be small in order to be nonembolizing which is not useful with respect to DeVoe (App. Br. 4). However, the benefits of Ranney's nanoparticles are not limited to their nonembolizing advantage since these nanoparticles are used in, for example, cremes, lotions, and mouthwashes which raise no embolizism potential (col. 18, ll. 8-16).

We also perceive merit in the Examiner's proposal to modify Ranney's nanoparticles so that the carrier particle is an insoluble inorganic such as silica oxide as required by the appealed claims and as taught by DeVoe (col. 14, ll. 40-52). This is because Ranney expressly teaches that carrier substances useful in patentee's invention include hydrophilic (i.e., water soluble) substances but that hydrophobic (i.e., water insoluble) carriers may be favored for certain therapeutic applications (col. 2, l. 55-col. 3, l. 4). In light of this express teaching, an artisan would have used a water insoluble inorganic material of the type taught by DeVoe as the hydrophobic carrier containing nanoparticles envisioned by Ranney for use in certain therapeutic applications based upon a reasonable expectation of success. *In re O'Farrell*, 853 F.2d 894, 904 (Fed. Cir. 1988). Appellant's argument (Reply Br. 2) that Ranney's hydrophobic carrier teaching at column 3, lines 2-4, concerns background art (rather than patentee's nanoparticle invention) is incorrect as revealed by reading the entire paragraph (i.e., at col. 2, l. 1-col. 3, l. 4).

In light of the foregoing, we determine that the Examiner's proposed combination of DeVoe and Ranney constitutes simply the combination of familiar elements according to known methods which yield predictable results. As recently explained by the Supreme Court, the combination of familiar elements according to known methods is likely to be obvious when it does not more than yield predictable results. *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (US 2007). For this reason, we further determine that the Examiner has established a prima facie of obviousness with respect to claim 1 which Appellant has failed to successfully rebut with argument or evidence of nonobviousness.

For corresponding reasons, we also share the Examiner's obviousness conclusion with respect to the article defined by independent claim 22 which comprises derivatized nanoparticles of the type discussed above which are immobilized. According to Appellant, "[n]either DeVoe nor Ranney disclose[s] or suggest[s] an article comprising such immobilized particles" (App. Br. 5). Appellant is incorrect. Ranney explicitly teaches using nanoparticles in forms which would necessarily render them immobilized such as coatings (col. 17, ll. 55-67) as well as tablets, caplets, or solids (col. 18, ll. 8-12).

Finally, there is no persuasive merit in the Appellant's arguments concerning certain dependent claims represented by claims 3 and 4 (App. Br. 5). As explained above and in the Answer, the combined teachings of the applied references would have suggested the particle sizes of claim 3

(Ranney, col. 15, ll. 55-57) and the silica oxides of claim 4 (DeVoe, col. 14, ll. 40-52).

For the above stated reasons, we hereby sustain the § 103 rejection of all appealed claims as being unpatentable over DeVoe in combination with Ranney.

The decision of the Examiner is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(effective Sept. 13, 2004).

AFFIRMED

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